



U.S. Department
of Transportation
**Research and
Special Programs
Administration**

400 Seventh St., S.W.
Washington, D.C. 20580

JUL 24 2003

DOT-E 6765
(SIXTEENTH REVISION)

EXPIRATION DATE: May 31, 2005

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. **GRANTEE:** Air Products and Chemicals, Inc.
Allentown, PA

(See Appendix A to this document for a list of additional grantees)

2. **PURPOSE AND LIMITATIONS:**

a. This exemption authorizes the transportation in commerce of insulated non-DOT specification portable tanks containing Divisions 2.1 and 2.2 cryogenic liquid. This exemption provides no relief from the Hazardous Materials Regulations (HMR) other than as specifically stated herein.

b. The safety analyses performed in development of this exemption only considered the hazards and risks associated with transportation in commerce.

3. **REGULATORY SYSTEM AFFECTED:** 49 CFR Parts 106, 107 and 171-180.
4. **REGULATIONS FROM WHICH EXEMPTED:** 49 CFR §§ 172.203, 173.318, 173.320, 176.76(g), 176.30, 177.840, except as specified herein.
5. **BASIS:** This exemption is based on the application of Air Products and Chemicals, Inc. dated July 9, 2003, submitted in accordance with § 107.109.

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6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Proper Shipping Name/ Hazardous Materials Description	Hazard Class/ Division	Identi- fication Number	Packing Group
Helium, refrigerated liquid (cryogenic liquid)	2.2	UN 1963	N/A
Hydrogen, refrigerated liquid (cryogenic liquid)	2.1	UN 1966	N/A

7. SAFETY CONTROL MEASURES: Packaging prescribed is an insulated, non-DOT specification portable tank designed and constructed in conformance with Section VIII of the ASME Code, and subparagraph a. or b. of this paragraph. The portable tank is skid-mounted or enclosed in an ISO type frame. The portable tank is vacuum-insulated with a supplemental liquid nitrogen shield. Design pressure is 64 or 91 PSIG for the internal tank, and 6 PSIG for the liquid nitrogen tank. Design temperature is -452°F for the inner tank and any part, valve or fitting that may come in contact with the lading; and -320°F for the liquid nitrogen tank and any part, valve or fitting that may come in contact with liquid nitrogen. Nominal water capacity is 11,000 (U.S.) gallons for the inner tank and 385 (U.S.) gallons for the nitrogen tank. Material for the inner tank and the nitrogen tank is SA-240 Type 304 stainless steel; material for the outer jacket is SA 36 or ASTM A 283 or equivalent steel.

a. Each portable tank must conform to Gardner Cryogenics Corporation's drawing 7453 (internal tank design pressure is 64 PSIG) and design calculation 5750, or drawing 8075A (internal tank design pressure is 91 PSIG) and design calculation 2450 on file with the Office of Hazardous Materials Exemptions and Approvals (OHMEA). No new construction is authorized unless the design conforms with subparagraph 7.b. of this exemption.

b. New construction after December 31, 1992, must conform with § 178.338 except as follows. Corresponding drawings and calculations must be submitted to the OHMEA prior to first shipment.

(1) Impact testing may be waived for inner tank material of cargo tanks with a design temperature warmer than -420°F.

(2) § 178.338-10 does not apply.

(3) The portable tank need not conform to § 178.338-13(a) and (b). Lifting lugs, framework and any anchoring to the inner tank, the nitrogen tank or the tank jacket must conform with § 178.338-13(a). A portable tank that meets the definition of "container" in 49 CFR 450(a)(2) must meet the requirements of 49 CFR Parts 450 through 453, and each design must be qualified in accordance with § 178.270-13(c).

(4) Effective July 1, 2002, each tank must be marked with the exemption number "DOT-E 6765" in lieu of the "MC 338" marking required by § 178.338-10.

8. SPECIAL PROVISIONS:

a. Each portable tank must be reinspected and retested once every five years in accordance with § 173.32(e) as prescribed for DOT Specification 51 portable tanks. The test pressure in the inner tank must be determined from the following formulas:

If there is no vacuum in the outer jacket during test:

$$P_T = 1.25 \times [P_d + H_s + 14.7]$$

If vacuum exists in the outer jacket during test:

$$P_T = 1.25 \times [P_d + H_s + 14.7] - 14.7$$

Where:

P_T = Test pressure, psig

P_d = Design pressure (maximum allowable working pressure), psig

H_s = Static head of liquid in inner tank, psi

b. Each portable tank must be plainly and durably marked on both sides near the middle, in letters and numbers at least two (2) inches high, on a contrasting background, "DOT-E 6765". Each portable tank used in hydrogen service must be marked "One-way travel time _____ Hours" or "OWTT _____ Hours" in letters at least two (2) inches high near the "DOT-E 6765" marking. The proper OWTT must be determined using the formulas in subparagraphs d. or e. of this paragraph.

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c. Each portable tank must be prepared and shipped as required in § 173.318, as applicable for the lading.

d. Shipments by motor vehicles must conform with the following:

(1) The OWTT must be determined for each portable tank used in hydrogen service by the formula:

$$\text{OWTT} = 0.5 (\text{MRHT} - 24); \text{ for MRHT less than 72 hours, or}$$

$$\text{OWTT} = \text{MRHT} - 48; \text{ for MRHT of 72 or more hours.}$$

(2) The provisions of § 177.840 apply to each portable tank used in hydrogen service.

e. Shipments by cargo vessel must conform with the following requirements:

(1) Portable tanks may be overstowed only if enclosed in an ISO-type frame and otherwise suitably protected. In all situations, the portable tanks must be stowed such that they are readily accessible and can be monitored in accordance with the provisions of this exemption.

(2) The legend "One-Way Travel Time _____ Hours" or "OWTT _____ Hours" must be marked on the shipping paper immediately after the container description. The OWTT is determined by the formula:

$$\text{OWTT} = \text{MRHT} - 24 \text{ hours.}$$

(3) A written record of the portable tank's pressure and ambient (outside) temperature at the following times must be prepared for each shipment.

(i) At the start of each trip;

(ii) Immediately before and after any manual venting;

(iii) At least every 24 hours; and

(iv) At the destination point.

(4) Any lading road relief valve set at a pressure lower than that prescribed for the (safety) pressure

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relief valve must be closed during transportation by cargo vessel unless the rated holding time was determined based on the setting of the road relief valve.

f. No person may transport a charged portable tank unless the pressure of the lading is equal to or less than that used to determine the marked rated holding time and the OWTT is equal to or greater than the expected elapsed time between the start and termination of travel.

g. The actual holding time for each tank must be determined after each shipment. If it is determined that the actual holding time is less than 90 percent of the MRHT of the tank, the tank may not be refilled until it is restored to its MRHT or the tank is remarked with the reduced holding time determined by this examination.

h. A person who is not a holder of this exemption who receives a package covered by this exemption may reoffer it for transportation provided no modifications or changes are made to the package and it is reoffered for transportation in conformance with this exemption and the HMR.

i. A current copy of this exemption must be maintained at each facility where the package is offered or reoffered for transportation.

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle and cargo vessel except shipment of hydrogen is limited to transportation by motor vehicle.

10. MODAL REQUIREMENTS: A current copy of this exemption must be carried aboard each cargo vessel and motor vehicle used to transport packages covered by this exemption.

11. COMPLIANCE: Failure by a person to comply with any of the following may result in suspension or revocation of this exemption and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:

- o All terms and conditions prescribed in this exemption and the Hazardous Materials Regulations, 49 CFR Parts 171-180.
- o Registration required by § 107.601 et seq., when applicable.

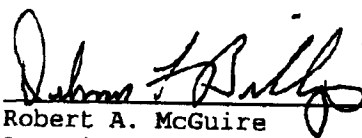
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Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this exemption must receive training on the requirements and conditions of this exemption in addition to the training required by §§ 172.700 through 172.704.

No person may use or apply this exemption, including display of its number, when the exemption has expired or is otherwise no longer in effect.

12. REPORTING REQUIREMENTS: The carrier is required to report any incident involving loss of packaging contents or packaging failure to the Associate Administrator for Hazardous Materials Safety (AAHMS) as soon as practicable. (Sections 171.15 and 171.16 apply to any activity undertaken under the authority of this exemption.) In addition, the holder(s) of this exemption must inform the AAHMS, in writing, of any incident involving the package and shipments made under the terms of this exemption.

Issued in Washington, D.C.:


Robert A. McGuire
Associate Administrator for
Hazardous Materials Safety

JUL 24 2003
(DATE)

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Research and Special Programs Administration, Department of Transportation, Washington, D.C. 20590.
Attention: DHM-31.

Copies of this exemption may be obtained by accessing the Hazardous Materials Safety Homepage at <http://hazmat.dot.gov/exemptions> Photo reproductions and legible reductions of this exemption are permitted. Any alteration of this exemption is prohibited.

PO: AM

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The following are hereby granted party status to this exemption based on their application(s) submitted in accordance with § 107.107 or § 107.109, as appropriate:

Company Name City/State	Application Date	Issue Date	Expiration Date
Airgas, Inc. Cheyenne, WY	May 23, 2004	JUN 17 2004	May 31, 2005
AGA Gas, Inc. Independence, OH	Aug 14, 2003	Aug 28, 2003	May 31, 2005
Aeriform Corporation Houston, TX	Aug 11, 2003	Aug 28, 2003	May 31, 2005
Air Products Helium, Inc. (APHI) Allentown, PA	Jul 09, 2003	Jul 24, 2003	May 31, 2005
BOC Gases Murray Hill, NJ	Aug 04, 2003	Aug 18, 2003	May 31, 2005
Hoyer-Odfjell (also known as Hoyer USA) Houston, TX	Oct 29, 2003	Oct 31, 2003	May 31, 2005
Iwatani International Corporation of America Fort Lee, NJ	Jun 09, 2003	Jul 01, 2003	May 31, 2005
L'Air Liquide Corporation Le Blanc-Mesnil, FR (U.S. Agent: Air Liquide America Corporation Houston, TX)	Aug 26, 2003	Sep 11, 2003	May 31, 2005
Linde Gas, LLC (formerly AGA Gas, Inc.) Independence, OH	Dec 15, 2003	Jan 09, 2004	May 31, 2005
Messer Griesheim Industries, Inc. Malvern, PA	Jul 29, 2003	Aug 18, 2003	May 31, 2005

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Company Name City/State	Application Date	Issue Date	Expiration Date
Nippon Helium Inc. Yokohama, Japan (U.S. Agent: Mitsui & Co. (U.S.A.) Inc. New York, NY JP (U.S. Agent: Mitsui & Co. (U.S.A.) New York, NY)	Sep 15, 2003	Sep 24, 2003	May 31, 2005
Praxair, Inc. Danbury, CT	Aug 29, 2003	Sep 11, 2003	May 31, 2005
Teisan Kabushiki Kaisha Tokyo, JP (U.S. Agent: Air Liquide America Corporation Houston, TX)	Aug 26, 2003	Sep 11, 2003	May 31, 2005
Union Helium Company, Ltd. Minato-ku, Tokyo 105- 0012, JP	Oct 23, 2003	Oct 23, 2003	May 31, 2005



for Robert A. McGuire
Associate Administrator for
Hazardous Materials Safety